Remarks

Claims 1 through 13 remain pending in the application.

The Office Action objects to the abstract because it is not on a separate sheet within the range of 50 to 150 words in length. The Office Action also objects to the specification for not including proper headers to identify each section. The specification and abstract are amended to address the informalities identified by thte Examiner.

The Office Action objects to Claims 2 for including acronyms. The Office Action also objects to Claims 10 and 11 as not clearly identifying the claimed invention. Appropriate correction is made. The Office Action also indicates that the specification does not identify what is identified as computer readable medium. Applicant asserts that computer-readable medium is standard langauage and understood to define several types of readable storage medium. Further, on page 7, lines 20 through 28, the specification identifies several different applications for use.

The Office Action rejects claims 1 through 13 under 35 U.S.C., 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. Appropriate correction is made.

The Office Action rejects Claims 1 through 13 as directed to non-statutory subject matter under the assertion that Claims 1 through 13 cite a process, device and medium for transforming data in accordance with a mathematical algorithm without disclosing a practical/physical application. The Office Action

further asserts that claims 1 through 6, 12 and 13 are not directed to a machine or apparatus and device and Claims 7 and 9 are not directed to any specific hardware component to realize the implementation and are thus considered as software per se. Claims 1, 7 through 9 and 10 are amended to apply to determining and outputting a transforming element for a given transformation function. Also, Claim 1 is amended to claim a process carried out by a device. It is understandable that the determined measure of transformation is an output. By amending these claims, it is clarified that the portions of the digital signal are received.

The claimed inventions therefore decompose the transformation matrix, decompose the rotation and auxiliary matrix, determine the transforming element and output the determined measure which represents the transforming element for a given transformation function. Therefore, claimed inventions in the claims as amended produce tangible results, and the subject matter of the amended claims may be considered statutory subject matter. Accordingly, the Applicant respectfully requests withdrawal under 35 U.S.C. §101.

The Office Action rejects Claims 1 through 13 as anticipated by Ralf, et al., "Audio Coding Bases on Integer Transform", under the assertion that Ralf discloses a process for determining a transforming element for a given transformation function having a transformation matrix and corresponds to a transformation of a digital signal from the time domain into the frequency domain or vice versa wherein the transformation matrix is decomposed into a rotation matrix and an auxiliary matrix which, when multiplied with itself, equals a permutation matrix multiplied with an integer diagonal matrix.

The Office Action further asserts that the rotation matrix and the auxiliary matrix are decomposed into a plurality of lifting matrices and the transforming element is determined to comprise a plurality of lifting stages which correspond to the lifting matrices.

The cited reference does not disclose all limitations of the claimed invention. Ralf does not disclose an auxiliary matrix which, when multiplied with itself, equals a permutation matrix multiples with an integer diagonal matrix. Further, Ralf does not disclose an auxiliary matrix decomposed into a plurality of lifting matrices. Instead, on page 2, column 1, paragraph 7, Ralf discloses that a Modified Discrete Cosine Transform (MDCT) itself can be decomposed into Givens Rotations and the lifting scheme can be applied. Specifically, A MDCT is reduced to a Discrete Cosine Transform of Type IV (DCT-IV) and the DCT-IV can be written as an application of Givens rotation. Further, the Givens rotation is decomposed into three lifting steps, the lifting scheme allowing approximating the decomposed transform by a reversible integer transform. Thus the introduced transform by Ralf produces integer output values instead of floating point values and provides perfect reconstruction. Thus, no error is introduced by applying forward and inverse transform. Therefore, Ralf only discloses a rotation matrix, specifically a Givens rotation, and the rotation matrix decomposed into a plurality of lifting matrices.

On the other hand, Applicant's process claims that the transformation matrix is decomposed into a rotation matrix and an auxiliary matrix which, when multiplied by itself, equals a permutation matrix multiplied with an integer diagonal matrix. This allows for the number of roundings comprised by the

transforming element to be significantly reduced. Therefore, because Ralf does not disclose an auxiliary matrix and the decomposition of the auxiliary matrix into a plurality of lifting matrices, Ralf does not anticipate the Applicant's claimed invention.

Claims 2 through 6 depend from Claim 1 and for the reasons discussed above, Ralf does not anticipate these claims.

The Office Action rejects Claim 8 as anticipated by Ralf under the assertion that Ralf discloses a method of transforming a digital signal from the time domain into the frequency domain or vice versa using a transforming element wherein the transforming element corresponds to a given transformation function, which transformation function includes a transformation matrix wherein the transforming element is determined by a process including decomposing the transformation matrix into a rotation matrix and an auxiliary matrix which, when multiplied with itself, equals a permutation matrix multiplied with an integer diagonal matrix. The Office Action further asserts that Ralf discloses decomposing the rotation matrix and the auxiliary matrix each into a plurality of lifting matrices and determining the transforming element to comprise of a plurality of lifting stages which correspond to the lifting matrices, each lifting stage including the process of sub-blocks of the digital signal by an auxiliary transformation and by a rounding unit.

As discussed above, Ralf does not disclose an auxiliary matrix which, when multiplied with itself, equals a permutation matrix multipled with an integer diagonal matrix. Further, Ralf does not disclose an auxiliary matrix decomposed into a

plurality of lifting matrices. Therefore, Ralf only discloses a rotation matrix (Givens rotation) the rotation matrix decomposed into a plurality of lifting matrices (the lifting matrices). Instead, Applicant's method claims decomposing the transformation matrix into rotation matrix and auxiliary matrix, decomposing the rotation matrix and auxiliary matrix each into a plurality of lifting matrices and determining the transforming element to comprise a plurality of lifting stages which correspond to the lifting matrices. Therefore, because Ralf does not disclose an auxiliary matrix and the decomposition of the auxiliary matrix into a plurality of lifting matrices, Ralf does not anticipate the Applicant's claimed invention.

The Office Action rejects Claims 7 and 10 through 13 for the same reasons Claims 1, 3, 4 and 8 were rejected. As argued above, Ralf does not disclose the claimed invention and for these same reasons, Ralf does not anticipate Claims 10 through 13.

Conclusion

This response has addressed all of the Examiner's grounds for rejection. The rejections based on prior art have been traversed. Reconsideration of the rejections and allowance of the claims is requested.

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By: /Niky Economy Syrengelas/
Niky Economy Syrengelas, Esq.

Reg. No. 46680